

Name: _____

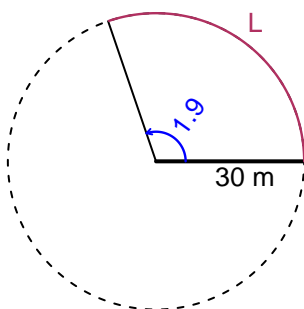
Date: _____

Trig Final (TEST v646)

- You can use a calculator (like [Desmos](#))
- You should have a unit-circle with special angles and coordinates marked.

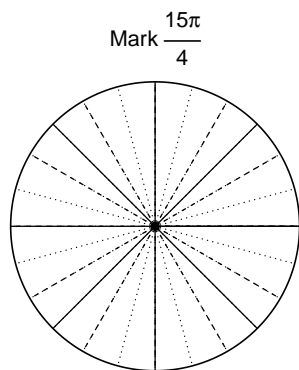
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 30 meters. The angle measure is 1.9 radians. How long is the arc in meters?

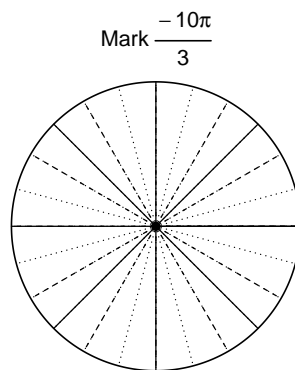


Question 2

Consider angles $\frac{15\pi}{4}$ and $-\frac{10\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{15\pi}{4}\right)$ and $\cos\left(-\frac{10\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\sin(15\pi/4)$



Find $\cos(-10\pi/3)$

Question 3

If $\sin(\theta) = \frac{-45}{53}$, and θ is in quadrant IV, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = 8.69$ meters, a frequency of 2.4 Hz, and an amplitude of 3.67 meters. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).